Small Business Innovation Research/Small Business Tech Transfer

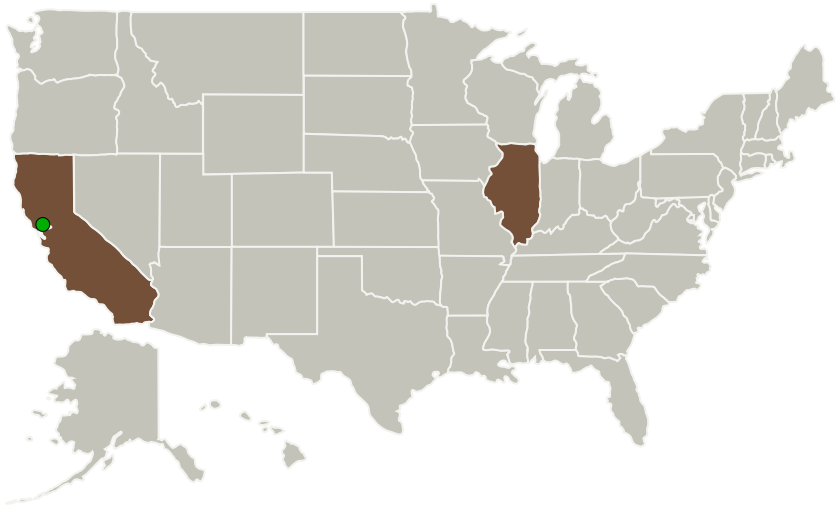
Strain Actuated Solar Arrays (SASA), Phase I

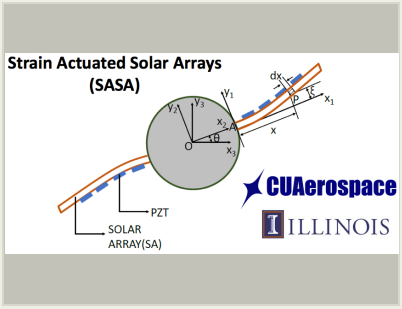
Completed Technology Project (2017 - 2017)

Project Introduction

The team of CU Aerospace and the University of Illinois at Urbana-Champaign propose multifunctional solar arrays, which can be used for attitude control of a spacecraft. The solar arrays are actuated using PZT panels which produce strain. The proposed platform is called Strain Actuated Solar Array (SASA). SASA is intended to be a modular package that can be added to any satellite to provide sub-milli-arcsecond pointing and active jitter dampening. Due to the actuating mechanism and modular design, SASA will be able to scale to be used in a variety of satellite bus (regular satellites to smallsats). This study aims to develop different control algorithms and a high fidelity hardware in the loop platform to test the control algorithms for a scaled SASA prototype. The study would conclude with testing and verifying the control response for the prototype, thereby increasing reliability of the SASA platform promoting it to TRL 4. Subsequent Phases of this project would test the SASA platform in vomit comets and culminate with a test flight on a CubeSat platform to prove flight worthiness (CAPSat).

Primary U.S. Work Locations and Key Partners





Strain Actuated Solar Arrays (SASA), Phase I Briefing Chart Image

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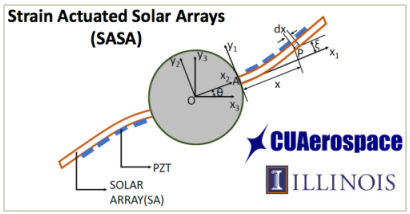
Organizations Performing Work	Role	Type	Location
CU Aerospace, LLC	Lead Organization	Industry	Champaign, Illinois
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Illinois

Images



Briefing Chart Image
Strain Actuated Solar Arrays (SASA), Phase I Briefing Chart Image
(https://techport.nasa.gov/image/127472)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
CU Aerospace, LLC

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

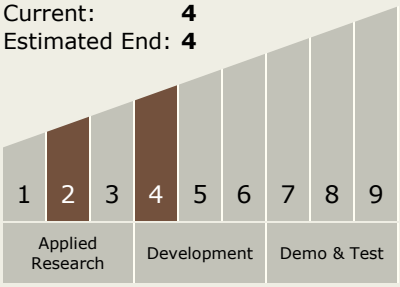
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Alexander R Ghosh

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.1 Photovoltaic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System